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Scorpions of Saudi Arabia **(List of species, their distribution, and identification key)**

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Abstract

This paper presents an updated list of scorpions recorded in the Kingdom of Saudi Arabia, the distribution localities of the species, and simplified identification keys to families and genera. The list includes 23 species and 3 subspecies that belong to 3 families: 18 species of 10 buthid genera, 1 hemiscorpiid species, and 4 species and 3 subspecies of 3 scorpionid genera.

Keywords: Scorpions, Saudi Arabia.

Introduction

Scorpions of Saudi Arabia are not adequately studied yet. The first comprehensive work dealt with them was that of Vachon (1979) who provided a taxonomic study of 14 species and subspecies. Previous and successive infrequent works included the works of Kinzelbach (1985), Vachon & Kinzelbach (1987), and El-Hennawy (1992) who reviewed the scorpion species in the Middle East and the Arab countries. Hendrixson (2006) discussed the taxonomy and species composition of the buthid scorpion fauna in the Kingdom of Saudi Arabia, with notes on two other families. He reviewed the old and recent literature and provided identification keys to families, genera and species of all families with distribution maps of species. Recently, several contributions to the comprehensive study of the scorpion sting syndrome in Saudi Arabia and scorpion's identification appeared in the works of Al-Sadoon & Al-Farraj (2008) and Al-Asmari, *et al.* (2007, 2009a, 2009b) to survey different regions of the country, i.e. Jazan, Al-Medina Al-Munawara, Al-Baha, Hail, and Riyadh regions.

This paper is prepared to present an updated list of scorpions recorded in the Kingdom of Saudi Arabia, the distribution localities of the species, and simplified identification keys to families and genera. The list includes 23 species and 3 subspecies

that belong to 3 families: 18 species of 10 buthid genera, 1 hemiscorpiid species, and 4 species and 3 subspecies of 3 scorpionid genera.

The main references consulted for systematics and identification keys are: *Catalog of the Scorpions of the World (1758-1998)* (Fet *et al.*, 2000), and the works of Sissom (1990), El-Hennawy (1992), and Kovařík (2009). The list and distribution of species mainly depended on Vachon (1979), El-Hennawy (1992), and Hendrixson (2006), in addition to other references.

Scorpions of Saudi Arabia

Family **Buthidae** C. L. Koch, 1837

Genus ***Androctonus*** Ehrenberg, 1828

Androctonus bicolor Ehrenberg, 1828

A. b.; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Androctonus crassicauda (Olivier, 1807)

Buthus australis citrina; Gough & Hirst, 1927: 4; Madina (= *Androctonus amoreuxi* (Audouin, 1825)), "misidentification" (Hendrixson, 2006: 109).

A. c.; Vachon, 1979: 31-34, figs. 1-2, 4; Riyadh; Al Khardj; Riyadh-Dammam, km 85; Wadi Awsat; Harad; Jeddah; Buraiman, Torquam, Wadi Usfahn (near Jeddah); Wadi Hanifa; Al Khubra; Jebel Shafaf; Shaira; Hawi; Khurma; Qunfidah; Medain Saleh; Rumaiya; Khashm ath Thumani; NE Nariya; S Dharan.

A. australis; Levy & Amitai, 1980: 36, 40; Jidda. (El-Hennawy, 1992; Hendrixson, 2006: 38)

A. c.; Hendrixson, 2006: 38-43, figs. 1-2, plate 1; Makkah By-pass km 91.5, 21°14'N 39°49'E, 150 m; Makkah By-pass km 126, 21°19'N 40°00'E, 300 m; Jabal Sayid, 23°49'N 40°57'E, 1000 m; Jeddah City Dump, sea level, 21°24'N 39°13'E; Wadi ar-Rika, 22°30'N 44°35'E; Hulaifa, camp near oasis, 3500 ft; Province El Khobar; Wadi Turabah, 21°N 40°E, 1350 m; station Riyadh; Khashm ath-Thumami, 27°40'N 44°55'E; 35 km NE of Nariya, 27°39'N 48°43'E; 5 km S of Dhahran, 26°15'N 50°08'E; Jabal as-Sinfa, Sawawin District, 27°57'N 35°47'E; Hatim al-Khalidi, Wadi Qatan, 18°06'N 44°07'E; "près de Shigri", 28°N 36°E; Wadi Qatan, 18°06'N 44°07'E, 1500 m; Makkah By-pass km 80, 21°15'N 39°13'E; Makkah Bypass km 118.3, 21°17'N 39°56'E; Makkah By-pass km 125, 21°19'N 40°40'E, 300 m; Jeddah, 21°25'N 39°12'E; south of Jeddah, near sea; Wadi Hamaq, Camp 2; Riyadh; Sanam; al-Hashbah; 20 km NE of Makkah; Jawf; Wadi Qatan; Dammam; Sahal rimpth, 750 m; Taif; Addar, 22°10'N 39°30'E, 150 m; Khaybar/Hail; Wadi Turabah; 5 km W of al-Mubarraz; Wildlife Research Center, ca. 30 km SE of Taif, 21°16'N 40°42'E, 1400 m; Wadi ar-Rika, 22°30'N 44°35'E; vicinity of Riyadh; Turayf, 31°44'N 38°33'E, 850 m; Makkah By-pass km 80, 21°15'N 39°43'E, 150 m; Jabal al-Ghamdiyah.

A. c.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus ***Apistobuthus*** Finnegan, 1932

Apistobuthus pterygocercus Finnegan, 1932

A. p.; Finnegan, 1932: 92; Uruq Dhahiqah, Shena.

A. p.; Vachon, 1979: 34-35, figs. 4-5; Uraq (SE Arabia); Dhahiga; Shannah; Andhur; Al Khardj; Dhahran.

A. p.; Hendrixson, 2006: 44-46, figs. 3, 6, plate 2; Safura Desert; Shawala, Camp 3.

A. p.; Al-Asmari, *et al.* 2009a: 106; Hail.

Genus *Buthacus* Birula, 1908

Buthacus buettikeri Hendrixson, 2006

B. leptochelys ssp.?; Vachon, 1979: 38-39, figs. 7-8, 26, 29, 61-63; Wadi Diriyah; Hofuf Road; Wadi Khuwa; Al Khubra; Jebel Samar.

B. b.; Hendrixson, 2006: 47-52, 59, figs. 4-6, plates 3, 4; Um ad-Dabah. Khashm Dhibi. Addar. Wadi Maraum. Jabal al-Ghamdiyah. Kijat. Makkah By-pass km 91.5.

B. leptochelys; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh. [The identification of *B. leptochelys* may be wrong.]

Buthacus yotvatensis nigroaculeatus Levy, Amitai & Shulov, 1973

B. y. n.; Vachon, 1979: 36-38, figs. 6, 8; Dammam; Al Khardj; Dhahran; Kurais area.

B. tadmorensis n.; Kinzelbach, 1985: map III.

B. y. n.; Hendrixson, 2006: 52-56, figs. 6-7, plate 5; Rub al-Khali, 22°07'N 48°14'E; Chantier OGER International, Dammam; Riyadh; vicinity of Riyadh; Aqabat al-Uhuraytan, 27°48'N 36°04'E; ca. 80 km NW of Riyadh; Riyadh; Khashm Sudayr.

B. y. n.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus *Butheolus* Simon, 1882

Butheolus anthracinus (Pocock, 1895)

B. a.; Hendrixson, 2006: 56-59, figs. 6, 8, plate 6; Khamis Mushait, 18°18'N 42°44'E.

Butheolus villosus Hendrixson, 2006

B. v.; Hendrixson, 2006: 59-61, figs. 6, 9, plate 7; Khashm Dhibi.

Genus *Compsobuthus* Vachon, 1949

Compsobuthus arabicus Levy, Amitai & Shulov, 1973

C. a.; Levy, Amitai & Shulov, 1973: 122-124, figs. 17-20; Daugha; Wadi Mughhin; Ramlat Enfel; Khor Enfel.

C. a.; Vachon, 1979: 39-40, figs. 9, 11; Daugha; Ramlat Enfel; Khor Enfel; Wadi Mughohin; SW & NW Dhahran; Quwayiyah; El Khubra, Ath Thamamah, N of Riyadh.

C. a.; Hendrixson, 2006: 62-64, figs. 10, 13; Daugha, 900 feet [near Yemen-Oman borders].

C. a.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Compsobuthus fuscatus Hendrixson, 2006

C. weneri ssp.?; Vachon, 1979: 40-42, figs. 10-11, 58-60; Wadi Marba, Khamis Mushayt; Village Qaraah; Abha-Taif Road; Wadi Usfahn (near Jeddah).

C. f.; Hendrixson, 2006: 65-67, 74, figs. 11, 13, plate 8; Jabal Qishayradh, 21°17'N 40°17'E; al-Mashrab Sarat Abidah, nr. 18°N 43.5°E, 2000 m; Wadi Kharrar, 21°17'N 40°06'E, 460 m; Wadi al-Amar, 18°52'N 42°16'E, 2400 m; Namas, 2380 m; Jabal Sawda, 18°18'N 42°20'E, 2000 & 2800 m; Wadi Mahra, 19°38'N 42°38'E, 2000 m; Wadi Mihrim, 13 km Taif al-Had Road, 21°20'N 40°19'E, 1700 m; Wadi Sizan Dam, 17°02'N 41°55'E, 200 m; Hijla, 14 km E of Abha; Jeddah; Wadi Shuqub, Makkah Province, 20°39'N 41°13'E, 1390 m.

C. weneri; Al-Asmari, *et al.* 2007: 831; Jazan; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

[The identification of *C. weneri* may be wrong.]

Compsobuthus longipalpis Levy, Amitai & Shulov, 1973

C. l.; Hendrixson, 2006: 68-71, figs. 12, 13; Makkah District.

***Compsobuthus pallidus* Hendrixson, 2006**

C. p.; Hendrixson, 2006: 71-74, figs. 13, 14, plate 9; Saudi Arabia : 31°40'N 39°30'E, 800 m [near Jordan-Iraq borders].

***Compsobuthus setosus* Hendrixson, 2006**

C. s.; Hendrixson, 2006: 74-78, figs. 13, 15, plate 10; Khashm Khafs; Riyadh; vicinity of Riyadh.

Genus ***Hottentotta*** Birula, 1908

***Hottentotta jayakari jayakari* (Pocock, 1895)**

Buthotus j.; Kinzelbach, 1985: Saudi Arabia.

H. j. j.; Hendrixson, 2006: 78-81, figs. 13, 14, 18, plate 11; Farasan Island (Red Sea).

H. j.; Al-Asmari, *et al.* 2007: 831; Jazan.

Genus ***Leiurus*** Ehrenberg, 1828

***Leiurus jordanensis* Lourenço, Modry & Amr, 2002**

L. j.; Hendrixson, 2006: 82-64, figs. 17, 18, 20a, plates 12-13; al-Uyaynah, 28°55'N 36°03'E, 740 m; al-Tawil, 29°58'N 39°34'E, 840 m [near Jordan borders].

***Leiurus quinquestriatus* (Ehrenberg, 1828)**

Buthus q.; Gough & Hirst, 1927: 5, fig. 8; Medina.

L. q. brachycentrus; Vachon, 1966: 211; ARABIA.

L. q.; Vachon, 1979: 49-50, figs. 8, 37, 46-50, 64-66; Wadi Mizbil; Wadi Durmah; Khamis Mushayt; Wadi Tumeir; Wadi Mutaiwiyah, Mecca Road; Jeddah; Wadi Khumra; Abha-Gizan, km 53; Wadi ad Dilla; Khashm Dibi; Jebel Banban; Jubail; Shi area, al Qunfida; Wadi Fatima; Gizan.

L. q. brachycentrus; Levy & Amitai, 1980: 47; Jidda (Gumfudam).

L. q. hebraeus; Levy & Amitai, 1980: 48-53, figs. 47-51, map 3; Jidda; Medina; Amarna.

L. q.; Hendrixson, 2006: 84-64, figs. 18, 19, 20b-c, plates 14-15; Manfah, 17°36'N 43°39'E; Makkah By-pass km 126; Jabal Sayid, 23°49.5'N 40°57'E, 1000 m; Wadi Shayban; Harrat Kuishm, 23°13'N 41°23'E; Grandi Lavori Road, 19°46'N 41°40'E, 960 m; Camp at al-Baha, 20°10'N 41°25'E, IX.1982; Wadi Knayton, 550-650 m; Khamis; Bani Sar, Baha Province, 20°13'N 41°27'E, 2180 m; al-Foqah, Baha Province, 19°50'N 41°51'E, 1630 m; Wadi Shuqub, Makkah Province, 20°39'N 41°13'E, 1390 m; Harithi, 21°18'N 40°18'E; Wadi Marwani; Wadi Turabah, Makkah Province, 21°N 41°E, 1250 m; al-Hadda, 21°23'N 40°14'E, 2000 m; Khashm Dhibi; Jizan; Jabal Dabbagh, 27°52'N 35°45'E, 2000 m; Jabal Barad, 21°08'N 40°13'E, 2000 m; Wadi Turabah, 1800 m; Jiar, 23°38'N 38°33'E; Wadi Thareira, 21°09'N 40°44'E, 1440 m; wadi 30 km NE of al-Jamun, 21°48'N 39°55'E, 350 m; Hakimah, 17°01'N 42°50'E, 60 m; Wadi Wajj, 21°09'N 40°22'E, 1600 m; Jabal Qishayradh, 21°17'N 40°17'E, 1950 m; 1 ♀, Makkah By-pass km 97, 21°12'N 39°50'E, 225 m; Makkah By-pass km 91.5, 21°15'N 39°48'E, 200 m; Wadi Qatan, 1350 m; Hijla, 14 km E of Abha; 10 km NE of Biljurshi; Shumaisy, 25°06'N 38°43'E, 740 m; an-Naamah, 20°15'N 41°16'E, 2100 m; Baha; Fare, 22°45'N 39°47'E, 850 m; al-Foqah, Baha Province, 19°50'N 41°51'E, 1630 m; Wadi Wajj, 18 km SW of Taif, 1800 m; Wadi Tayyah, 18°32'N 42°14'E, 950 m; Wadi Bani Malik; Wadi Tuweig; Wadi Turabah; Wadi Shuqub; al-Faraah; Adama, 1770 m; Wadi Dhiyan, 19°50'N 41°28'E, 1050 m; Biljurshi, 1840 m; Bani Sar; Wadi Maharish, 1000 m; Wadi Yamaniyah, 1100 m; Wadi Ellah, 20°35'N 41°35'E, 1480 m; Adama, 1770 m; Wadi Asidah, 20°25'N 41°12'E, 1480 m; halfway between Ranja nr. Bisha; Jeddah; Wadi Hanaq; Adama, 1770 m; al-Amar, 25°59'N 50°32'E; Jeddah; Wadi Khumra; Khashm Dhibi; Hesua, Camp 1; Wadi Turabah, 1510 m; Khashm al-Atash; Hudenah, 800 m;

Riyadh; vicinity of Riyadh; Wadi Shamruq, 20°29'N 41°19'E, 1600 m; Wadi Mahra, 19°38'N 41°54'E, 2000 m; Grandi Lavori.

L. q.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus *Orthochirus* Karsch, 1891

Orthochirus innesi Simon, 1910

O. i.; Vachon, 1979: 53-55, figs. 36, 38, 55-57; Wadi Mizbil; Wadi Mutaiwiyah, Mecca Road; Al Khardj; Afif, N of Abha; Jeddah; Kushm Dibi.

O. i.; Hendrixson, 2006: 91-95, figs. 21, 23, plate 16; Huraymila, ca. 80 km NW of Riyadh; Nugrah, Janabiyah, 25°36'N 41°28'E, 900 m; Wadi Bani Malik; Wadi Nissah; Hudenah; Khashm Khafs; Wadi Mukhtayn; Khashm Dhibi; Wadi Marwani; Riyadh; Dammam.

O. i.; Al-Asmari, *et al.* 2007: 831, 833; Jazan, Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 100, 106; Al-Baha, Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Genus *Parabuthus* Pocock, 1890

Parabuthus leiosoma leiosoma (Ehrenberg, 1828)

Buthus liosoma; Simon, 1882: 244; Gumfuda.

P. liosoma liosoma; Vachon, 1979: 55-56, figs. 3, 36, 39; Bahara; Abha-Gizan, km 53; Wadi ad Dilla; Shi area, al Qunfida; Jeddah; Burainam, near Jeddah; near Gizan.

P. l. l.; Hendrixson, 2006: 96-99, figs. 22, 23, plate 17; al-Qunfudhah; nr. Abu Arish, 16°58'N 42°50'E, ca. 50 m; Jizan; nr. Jizan, ca. 30 m; Khulais nr. Jeddah; Khashm Khafs; Hesua, Camp 1; Lower Grandi Lavori, 19°35'N 41°39'E, 550 m; Tarfa, 17°03'N 42°21'E; N 30 degrees W 13 km from Shuqayq, 17°50'N 41°57'E, near sea level.

P. liosoma; Al-Asmari, *et al.* 2007: 830; Jazan.

Genus *Vachoniolus* Levy, Amitai & Shulov, 1973

Vachoniolus globimanus Levy, Amitai & Shulov, 1973

Buthacus minipectenibus; Levy, Amitai & Shulov, 1973: 128-130, figs. 27-31; Munegger-Sanam; Gebel Shamar; Naifa.

V. minipectinibus; Vachon, 1979: 49, figs. 12-17, 27, 30, 33, 36; Munneger Sanam; Gebel Shamar; S of Dharan; Khobar; Naifa.

V. g.; Hendrixson, 2006: 100-102, figs. 23, 24, plate 18; Munegger-Sanam; Riyadh.

V. minipectinibus; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Family *Hemiscorpiidae* Pocock, 1893

Genus *Hemiscorpius* Peters, 1861

Hemiscorpius arabicus Pocock, 1899

H. a.; Vachon, 1979: 59, figs. 41, 44, 45; Al Hair; Kushm Dibi, (South of Riyadh).

H. sp.; Hendrixson, 2006: 103-104, figs. 25, 27, plate 19; Wadi Birk.

H. a.; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Family *Scorpionidae* Peters, 1862

Genus *Nebo* Simon, 1878

Nebo hierichonticus (Simon, 1872) ?

N. h.; Kinzelbach, 1985: Saudi Arabia.

N. spp.; Hendrixson, 2006: 106, figs. 26, 27, plate 20; Munegger-Sanam; Riyadh. Grandi Lavori, 19°45'N 41°40'E, 800-1000 m; USGS Camp at al-Baha, 20°10'N 41°25'E, 2000 m; Buraiman, N of Jeddah; al-Uqdah, Baha Province, 19°35'N 41°07.5'E; Wadi Turabah,

Makkah Province, 21°N 40°E, 1350 m; Jabal Barad, 21°08'N 40°13'E, 2000 m; nr. Abha, 2000 m; Bani Sar, 20°05'N 41°26'E, 2130 m; Hakimah, 17°01'N 42°50'E, 60 m; Jabal Qishayradh, 21°17'N 40°17'E, 1950 m; Dalaghan, Asir, 18°05'N 42°43'E; Baha; Namas, 2380 m; Wadi Maharish, 1000 m; Khaybar/Hail; Leyla; Wadi Bani Malik, at foot of Jabal Ibrahim, 20°27'N 41°09'E, 1400 m; A.M. Al-Maliki, WDS; Wadi Mahra, 19°38'N 41°54'E, 2000 m.

N. h.; Al-Asmari, *et al.* 2007: 831; Jazan; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Genus *Pandinus* Thorell, 1876

Pandinus (Pandinurus) arabicus (Kraepelin, 1894)

Scorpio a.; Kraepelin, 1894: 58-60, fig.10; ARABIA. ?

P. a.; Kraepelin, 1899: 120; Homran, ARABIA.

Pandinus (Pandinurus) exitialis (Pocock, 1888)

P. e.; Vachon, 1966: 215; ARABIA. ?

Genus *Scorpio* Linnaeus, 1758

Scorpio maurus Linnaeus, 1758

Scorpio maurus arabicus (Pocock, 1900)

Heterometrus a.; Pocock, 1900: 363; ARABIA.

S. m. a.; Vachon, 1966: 215; ARABIA.

Scorpio maurus fuscus (Ehrenberg, 1829)

S. m. f.; Vachon, 1979: 57-59, figs. 43, 45; camp Khamis Mushayt; Road Taif-Abha, 200-300 km south of Taif,

S. m. f.; Al-Asmari, *et al.* 2009a: 100; Al-Baha.

Scorpio maurus kruglovi Birula, 1910

S. m. k.; Vachon, 1979: 57, figs. 40, 42, 45, 51-53; Wadi Hanifa; petrified forest near Riyadh.

S. m. k.; Al-Asmari, *et al.* 2007: 833; Al-Medina Al-Munawara; Al-Asmari, *et al.* 2009a: 106; Hail; Al-Asmari, *et al.* 2009b: 618; Riyadh.

Scorpio maurus spp.

S. m. spp.; Hendrixson, 2006: 108, figs. 27, 28, plate 21; USGS Camp at al-Baha, 20°10'N 41°25'E, 2000 m; Manfah, 17°36'N 43°39'E; Harithi, Makkah Province, 21°18'N 40°18'E, 1910 m; Bani Sar, Baha Province, 20°13'N 41°27'E, 2180 m; Jabal as-Sinfa, 27°57'N 35°47'E, 300 m; Jabal Sawda, 18°18'N 42°20'E, 2000 m; Hakimah, 17°01'N 42°50'E, 60 m; 31°40'N 39°30'E, 800 m; Hijfa; Namas, 2380 m; Adama, 1770 m.

List of species

Family **Buthidae** C. L. Koch, 1837

Androctonus bicolor Ehrenberg, 1828

Androctonus crassicauda (Olivier, 1807)

Apistobuthus pterygocercus Finnegan, 1932

Buthacus buettikeri Hendrixson, 2006

Buthacus yotvatensis nigroaculeatus Levy, Amitai & Shulov, 1973

Butheolus anthracinus (Pocock, 1895)

Butheolus villosus Hendrixson, 2006

Compsobuthus arabicus Levy, Amitai & Shulov, 1973

Compsobuthus fuscatus Hendrixson, 2006

Compsobuthus longipalpis Levy, Amitai & Shulov, 1973

Compsobuthus pallidus Hendrixson, 2006
Compsobuthus setosus Hendrixson, 2006
Hottentotta jayakari jayakari (Pocock, 1895)
Leiurus jordanensis Lourenço, Modry & Amr, 2002
Leiurus quinquestriatus (Ehrenberg, 1828)
Orthochirus innesi Simon, 1910
Parabuthus leiosoma leiosoma (Ehrenberg, 1828)
Vachoniolus globimanus Levy, Amitai & Shulov, 1973

Family **Hemiscorpiidae** Pocock, 1893

Hemiscorpius arabicus Pocock, 1899

Family **Scorpionidae** Peters, 1862

Nebo hierichonticus (Simon, 1872) ?
Pandinus (Pandinurus) arabicus (Kraepelin, 1894)
Pandinus (Pandinurus) exitialis (Pocock, 1888)
Scorpio maurus arabicus (Pocock, 1900)
Scorpio maurus fuscus (Ehrenberg, 1829)
Scorpio maurus kruglovi Birula, 1910
Scorpio maurus sspp.

Key to the scorpion families in Saudi Arabia

1. Pedipalp patella without ventral trichobothria; sternum subtriangular; anterior margin of carapace not conspicuously notched **Buthidae** C. L. Koch, 1837 (804 species)
 – Pedipalp patella with one or more ventral trichobothria; sternum subpentagonal; anterior margin of carapace with distinct notch 2
2. Metasomal segments I-IV with paired ventral submedian carinae; pedipalp chela trichobothrium **ib** located near base of fixed finger; lateroapical margins of tarsi produced into rounded lobes **Scorpionidae** Latreille, 1802 (243 species)
 – Metasomal segments I-IV with single ventromedian carina; pedipalp chela trichobothrium **ib** located midway along fixed finger; lateroapical margins of tarsi straight **Hemiscorpiidae** Pocock, 1893 (83 species)

Key to the genera of Family Buthidae in Saudi Arabia

1. Metasomal segment II widely flared, much wider than other segments of metasoma *Apistobuthus* Finnegan, 1932
 – Metasomal segment II not wider than other segments 2
2. Mesosomal tergites I and II with 5 distinct carinae *Leiurus* Ehrenberg, 1828
 – Mesosomal tergites I and II without carinae, or with at most 3 carinae 3
3. Carapace with distinct carinae 4
 – Carapace smooth or granulated but without distinct carinae 6
4. Central lateral (centromedian) and posterior lateral (posteriomedian) carinae of carapace fused forming a continuous linear row of granules to posterior margin *Compsobuthus* Vachon, 1949
 – Central lateral (centromedian) and posterior lateral (posteriomedian) carinae of carapace do not form a continuous linear row of granules to posterior margin 5

5. Dentate margin of pedipalp chela movable finger with 3 granules located just proximal to terminal denticle and one basal terminal; metasomal segments robust, increasing in width and depth posteriorly *Androctonus* Ehrenberg, 1828
 – Dentate margin of pedipalp chela movable finger with 4 granules located just proximal to terminal denticle and one basal terminal *Hottentotta* Birula, 1908
6. Pedipalp femoral trichobothria arranged in *alpha*-configuration (Angle formed by trichobothria d1, d3, and d4 opens toward external face of pedipalp femur [$<$]); stridulatory patch present on dorsal surface of metasomal segments I-III *Parabuthus* Pocock, 1890
 – Pedipalp femoral trichobothria arranged in *beta*-configuration (Angle formed by trichobothria d1, d3, and d4 opens toward internal face of pedipalp femur [$>$]); stridulatory patch absent 7
7. Carapace, in lateral view, with a distinct downward slope from median eyes to anterior margin; carapace and tergites densely granular; small scorpions (usually less than 30 mm long) 8
 – Carapace, in lateral view, with entire dorsal surface horizontal (or nearly so); carapace and tergites with variable granulation; scorpions of variable size..... 9
8. Metasomal segments IV and V punctate; telson elongate, aculeus as long or longer than vesicle *Orthochirus* Karsch, 1892
 – Metasomal segments ventrally smooth or granulated; telson bulbous, aculeus shorter than vesicle *Butheolus* Simon, 1882
9. Patella of pedipalp with 8 or 9 external trichobothria; carapace smooth to shagreened; male pedipalp chela swollen and globular *Vachoniolus* Levy, Amitai & Shulov, 1973
 – Patella of pedipalp with 7 external trichobothria; carapace granular or smooth; male pedipalp chela not swollen *Buthacus* Birula, 1908

Key to the genera of Family Scorpionidae in Saudi Arabia

1. Telson with subaculear tubercle *Nebo* Simon, 1878
 – Telson without subaculear tubercle 2
2. Stridulation organ located on opposing surfaces of coxae of pedipalps and first pair of legs. Pedipalp patella with numerous ventral trichobothria *Pandinus* Thorell, 1876
 – Stridulation organ absent. Pedipalp patella with 19 trichobothria, 13 of them on external surface *Scorpio* Linnaeus, 1758

Notes on species identification

I. Hendrixson (2006) differentiated among the following species of different genera as follows:

Genus *Buthacus*

1. Metasomal segments densely hirsute *Buthacus yotvatensis nigroaculeatus*
 – Metasomal segments with few setae *Buthacus buettikeri*

Genus *Butheolus*

1. Metasoma and telson densely hirsute; lateral inframedian carinae on metasomal segment IV absent *Butheolus villosus*
 – Metasoma and telson with few setae; lateral inframedian carinae on metasomal segment IV present *Butheolus anthracinus*

Genus *Compsobuthus*

1. Pedipalp chela fingers with outer accessory granules 2
– Pedipalp chela fingers without outer accessory granules 3
2. Lateral inframedian carinae on metasomal segments II and III represented by only a few granules; pedipalp chela fingers extremely elongated *Compsobuthus longipalpis*
– Lateral inframedian carinae on metasomal segments II and III present at least on posterior three-fourths; pedipalp chela fingers not as above *Compsobuthus fuscatus*
3. Sternite VII and ventral surface of metasomal segments with numerous small red setae; pedipalp chela length/depth approximately 7.00 *Compsobuthus setosus*
– Sternite VII and ventral surface of metasomal segments lacking numerous small red setae; pedipalp chela length/depth < 6.00 4
4. Carapacial and tergal surfaces densely, minutely granular; pectinal tooth counts 9-15; nine or fewer rows of granules along dentate margin of pedipalp chela fingers *Compsobuthus arabicus*
– Carapacial and tergal surfaces not as above; pectinal tooth counts 15-18; 10-11 rows of granules along dentate margin of pedipalp chela fingers *Compsobuthus pallidus*

Genus *Leiurus*

1. Base colour dark brown to black; ventrolateral carinae of metasomal segment V with spinoid denticles *Leiurus jordanensis*
– Base colour more or less yellow, often with dusky colouration, but never dark brown to black; ventrolateral carinae of metasomal segment V with lobate denticles distally *Leiurus quinquestriatus*

II. I agree with Hendrixson (2006) that scorpions of both *Nebo* and *Scorpio* need revision. Do all collected specimens of *Nebo* in Saudi Arabia belong to *Nebo hierichonticus* (Simon, 1872), or to other species?

Hendrixson (2006) stated that “a thorough revision, of *Scorpio*, is badly needed”. Three subspecies of *Scorpio maurus* are here listed according to Vachon (1966, 1979). Their identification and their situation may be changed after studying a good material from Saudi Arabia and adjacent countries.

According to the colour plates of Kovařík (2009), *Scorpio maurus fuscus* male has dark body while *Scorpio maurus arabicus* female has a lighter colouration. *Scorpio maurus kruglovi* female has the same colouration of *S. m. fuscus*, while its male has lighter pedipalps and metasoma. However, colouration is not enough to differentiate among species or subspecies. Even, the detailed study of *Scorpio maurus* subspecies by Birula (1910) is not adequate for identification.

III. I could not delete the doubtful (?) records of *Pandinus* from the list. This genus or a similar one was reported from the south of Saudi Arabia, but no available material for examination until now.

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